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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/620,258
Filing Date: July 15, 2003
Appellant(s): KUMAR ET AL.

Joseph B. Ryan
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1 April 2009 appealing from the Office action mailed 10 November 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

US Patent Application 10/620044

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

Disagreement is regarding claim 12, as there is no indication of an objection to the aforementioned claim.

This appeal involves claims 1, 3-11 and 13-21.

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2 has been canceled.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

7,013,255 SMITH 3-2006

Bae, J.J.; Suda, T.; "Survey of traffic control schemes and protocols in ATM networks". Proceedings of the IEEE; Volume 79, Issue 2, Feb. 1991 Page(s):170 - 189-[retrieved from IEEE database on 30.4.2008].

Hontas, S.; Tselikis, G.;Tompros, S.;Giamniadakis, J.;Loukatos, D.;Mitrou, N.;"ATM traffic generator card. An integrated solution". Computers and Communications, 1998. ISCC '98. Proceedings. Third IEEE Symposium. 30 June-2 July 1998 Pages: 161-165. [Retrieved on 13-7-06 from IEEE Database].

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 3-5, 11 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, II (US Patent 7,013,255) in view of St. Hontas et al. ["ATM Traffic Generator Card. An Integrated Solution." -retrieved from IEEE], hereinafter referred to as Smith and St. Hontas respectively.

In reference to claim 1, Smith discloses a method for simulating both burst and normal type traffic in a telecommunications network, (abstract; column 1, lines 25-65). Smith discloses:

•A method (Figure 3) of generating data traffic in a traffic generator, the method comprising the steps of (column 6, lines 15-30):

•Generating a first type of traffic (Figure 3-item 112) in accordance with a given distribution (i.e. normal distributed traffic; column 2, lines 10-30; column 2, lines 49-55); and

•Generating a second type of traffic different than the first type of traffic (Figure 3-item 108 and Figure 3-item124), the second type of traffic comprising at least one traffic burst (i.e. Lognormal distributed traffic; column 2, lines 32-48);

•Wherein the traffic burst is generated based at least in part on an amount of the first type of traffic generated over one or more time intervals (i.e. bimodal distributed traffic; column 3, lines 24-45; column6, lines 30-45; Figure3-item 132); wherein the step of generating the second type of traffic further comprises accumulating traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated traffic (i.e. percentage of the total number of packets in a specified time interval; column 6, lines 30-45).

However, the reference fails to show the method wherein a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. Nonetheless, this was a well-known feature in the art at the time of the invention, as further evidenced by St. Hontas. It would have been obvious to accordingly modify the method of Smith, for one of ordinary skill in the art at the time of time invention.

In an analogous art, St. Hontas discloses an ATM traffic generator for generating constant-bit-rate and bursty traffic streams, *(1. Introduction;* page 1). St. Hontas discloses a method for generating burst traffic, wherein a determination as to whether or not the traffic burst is generated for a given time interval (i.e. burst interval or silence interval; *3.Source model of the Generator,* page 2) is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals (i.e. dependencies between a burst and the following silence, or autocorrelative laws between bursts from cycle to cycle; *4.1.1 The core software part;* page 3; Figure 1). One of ordinary skill in the art would have been so motivated to accordingly modify the method of Smith, so as to provide flexibility to emulate a wide range of ATM traffic profiles (St. Hontas, Abstract).

In reference to claims 16 and 14, Smith discloses a method for simulating both burst and normal type traffic in a telecommunications network, (abstract; column 1, lines 25-65). Smith discloses:

•An apparatus (i.e. generator; Figure 2) for generating data traffic in a traffic generator, the device implementing a traffic generator operative (column 5, lines 53-65; column 6, lines 15-30):

•To generate a first type of traffic (Figure 3-item 112) in accordance with a given distribution (i.e. normal distributed traffic; column 2, lines 10-30; column 2, lines 49-55); and

•To generate a second type of traffic different than the first type of traffic (Figure 3-item 108 and Figure 3-item124), the second type of traffic comprising at least one traffic burst (i.e. Lognormal distributed traffic; column 2, lines 32-48); •Wherein the traffic burst is generated based at least in part on an amount of the first type of traffic generated over one or more time intervals (i.e. bimodal distributed traffic; column 3, lines 24-45; column6, lines 30-45; Figure3-item 132); wherein the step of generating the second type of traffic further comprises accumulating traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated traffic (i.e. percentage of the total number of packets in a specified time interval; column 6, lines 30-45).

However, the reference fails to disclose that the aforementioned apparatus having a processor and a memory; and wherein a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals [claim 16]; and a hardware traffic generator [claim 14]. Nonetheless, these were well-known features in the art at the time of the invention, as further evidenced by St. Hontas. It would have been obvious to accordingly modify the teachings of Smith, for one of ordinary skill in the art at the time of the invention.

In an analogous art, St. Hontas discloses an ATM traffic generator for generating constant-bit-rate and bursty traffic streams, *(1. Introduction;* page 1). St. Hontas discloses a method for generating burst traffic, wherein a determination as to whether or

not the traffic burst is generated for a given time interval (i.e. burst interval or silence interval; *3.Source model of the Generator;,* page 2) is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals (i.e. dependencies between a burst and the following silence, or autocorrelative laws between bursts from cycle to cycle; *4.1.1 The core software part;* page 3; Figure 1). One of ordinary skill in the art would have been so motivated to accordingly modify the apparatus of Smith, so as to provide flexibility to emulate a wide range of ATM traffic profiles (St. Hontas, Abstract). Also, St. Hontas discloses that the aforementioned architecture comprises hardware traffic generator, specifically a processor and memory (Figure 4; *4.2 The hardware part;* pages 4-5). One of ordinary skill in the art would have been so motivated to implement the traffic generator as hardware so as to promote design flexibility thereby allowing the apparatus to inter-work with a real traffic source and emulate the traffic profile (St. Hontas; 2. *The main features of the generator;* page 1-2).

In reference to claims 17 and 15, Smith discloses a method for simulating both burst and normal type traffic in a telecommunications network, (abstract; column 1, lines 25-65). Smith discloses:

•A method (Figure 3) of generating data traffic in a traffic generator, the method comprising the steps of (column 6, lines 15-30):

•Generating a first type of traffic (Figure 3-item 112) in accordance with a given distribution (i.e. normal distributed traffic; column 2, lines 10-30; column 2, lines

49-55); and

•Generating a second type of traffic different than the first type of traffic (Figure 3-item 108 and Figure 3-item124), the second type of traffic comprising at least one traffic burst (i.e. Lognormal distributed traffic; column 2, lines 32-48);

•Wherein the traffic burst is generated based at least in part on an amount of the first type of traffic generated over one or more time intervals (i.e. bimodal distributed traffic; column 3, lines 24-45; column6, lines 30-45; Figure3-item 132); wherein the step of generating the second type of traffic further comprises accumulating traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated traffic (i.e. percentage of the total number of packets in a specified time interval; column 6, lines 30-45).

However, the reference fails to disclose that the aforementioned method implemented via an article of manufacture comprising a storage medium containing one or more software programs for use in generating data traffic in a traffic generator, wherein the one or more software programs when executed implement the method steps; and wherein a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals [claim 17]; and a software traffic generator [claim 15]. Nonetheless, these were well-known features in the art at the time of the invention, as further evidenced by St. Hontas. It would have been obvious to

accordingly modify the teachings of Smith, for one of ordinary skill in the art at the time of the invention.

In an analogous art, St. Hontas discloses an ATM traffic generator for generating constant-bit-rate and bursty traffic streams, *(1. Introduction;* page 1). St. Hontas discloses a method for generating burst traffic, wherein a determination as to whether or not the traffic burst is generated for a given time interval (i.e. burst interval or silence interval; *3.Source model of the Generator,* page 2) is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals (i.e. dependencies between a burst and the following silence, or autocorrelative laws between bursts from cycle to cycle; *4.1.1 The core software part;* page 3; Figure 1). One of ordinary skill in the art would have been so motivated to accordingly modify the apparatus of Smith, so as to provide flexibility to emulate a wide range of ATM traffic profiles (St. Hontas, Abstract). Also, St. Hontas discloses that the aforementioned architecture comprises software traffic generator, specifically an article of manufacture comprising a storage medium containing one or more software programs for use in generating data traffic in a traffic generator, wherein the one or more software programs when executed implement the method steps (Figure 3; *4.1 The software part;* pages 3-4). One of ordinary skill in the art would have been so motivated to implement the traffic generator as software so as to promote design flexibility thereby allowing the apparatus to inter-work with a real traffic source and emulate the traffic profile (St. Hontas; *2. The main features of the generator,* page 1-2).

In reference to claim 3, Smith shows the method wherein the first type of traffic comprises comparative traffic characteristic of non-burst traffic (i.e. column 2, lines 49-55; column 5, lines 53-65).

In reference to claim 4, Smith shows the method wherein the given distribution comprises a Poisson distribution (column 1, lines 35-45).

In reference to claim 5, Smith shows the method wherein the given distribution comprises a Gaussian distribution (column 5, lines 40-52).

In reference to claim 11, Smith shows the method wherein the one or more time intervals each comprise sample slot times (column 7, lines 20-38).

Claims 6-10, 13, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith and St. Hontas, as applied to claim 1 above, and further in view of Bae et al. ["Survey of Traffic Control Schemes and Protocols in ATM Networks"-retrieved from IEEE].

In reference to claims 6, 18, and 20 Smith and St, Hontas disclose generating amounts of types of traffic in a traffic stream, for each of the one or more time intervals, based on

a capacity characterized by burst size (Smith; column 2, line 65-column 3, line 2). However, the references fail to expressly show the method wherein the step of generating the second type of traffic further comprises the step of determining, for each of the one or more time intervals, if an amount of the traffic of the first type generated during that interval is less than a comparison level, and if so adding an amount of compensatory traffic to a burst container having a capacity given by a burst size. Nonetheless, this would have been an obvious modification to the method of as further evidenced by Bae.

In an analogous art, Bae discloses a mechanism for modeling ATM network traffic (abstract). Bae further discloses determining, for each of the one or more time intervals, if an amount of the traffic of the first type generated during that interval is less than a comparison level (i.e. threshold value), and if so adding an amount of compensatory traffic to a burst container (i.e. buffer) having a capacity given by a burst size (i.e. adding cells to the queue until burst factor is reached; page 177, column 1, lines 18-column 2, line 8). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the known element of generating a second type of traffic for a traffic stream based on burst size, as taught by Smith and St. Hontas, with the known elements of adding traffic to a burst container having a capacity given by a burst size, as taught by Bae, without substantial modification to their respective functions, and the combination yielding the predictable result of generating the second type of traffic by determining if the amount of traffic is less than a comparison level and adding traffic to a burst container, of Applicant's invention.

In reference to claims 13, 19, and 21 Smith and St. Hontas fail to expressly show the method wherein the traffic of the second type comprises a plurality of traffic bursts which are generated in a manner which tends to compensate for temporary reductions in the amount of traffic of the first type so as to substantially maintain a particular level of traffic flow. Nonetheless, this would have been an obvious modification to the method as further evidenced by Bae.

In an analogous art, Bae discloses a mechanism for modeling ATM network traffic (abstract). Bae discloses ATM networks where the traffic of the second type comprises a plurality of traffic bursts which are generated in a manner which tends to compensate for temporary reductions in the amount of traffic of the first type so as to substantially maintain a particular level of traffic flow (i.e. traffic bursts are multiplexed to maintain constant levels; page 175, column 1, lines 30-58; page 176, column 1, lines 45-62). One of ordinary skill in the art would have been so motivated to accordingly modify the teachings of Smith and St. Hontas, so as to model the well known mechanism of statistical multiplexing of bursty ATM traffic sources to thereby gain efficiency (Bae; page 174, *III. Congestion Control in ATM Networks*, paragraph 1).

In reference to claim 7, Smith shows the method wherein the traffic burst is generated when a total amount of accumulated traffic in the burst container is greater than or equal

to the burst size (i.e. the total number of data packets of this type; column 6, lines 46-57; column 2, line 55- column 3, line 2).

In reference to claim 8, Smith shows the method wherein the burst size is determined as a function of a mean burst size and a corresponding variation range, (column 6, lines 31-45).

In reference to claim 9, Smith shows the method of wherein the amount of compensatory traffic comprises an amount of traffic given by a compensatory-accumulation size (i.e. total number of values generated by each generator; column 6, line 58-column 7, line 3).

In reference to claim 10, Smith shows the method wherein the compensatory-accumulation size is determined as a function of a mean compensatory-accumulation size and a corresponding variation range (column 6, lines 31-45).

(10) Response to Argument

Appellant's arguments filed 10 April 2009 have been fully considered but they are not persuasive.

In considering Appellant's arguments the following remarks are noted:

(I) Appellant contends that there is no teaching or suggestion directed to generating a traffic burst based at least in part on such accumulated compensatory traffic.

(II) Appellant contends that one skilled in the art would have not been motivated to modify Smith to incorporate the techniques disclosed in St. Hontas in view of the explicit teachings of Smith directly away from such a modification.

(III) Appellant contends that Bae discloses if a number of cells arriving during an interval are less than the threshold value of tokens in the token pool, no traffic is added to the queue.

(IV) Appellant contends that Bae does not teach generating traffic bursts in a manner which tends to compensate for temporary reductions in the amount of traffic of another type so as to substantially maintain a particular level of traffic flow.

In considering (I), Appellant contends that there is no teaching or suggestion directed to generating a traffic burst based at least in part on such accumulated compensatory traffic. Examiner respectfully disagrees. Examiner asserts that Smith discloses traffic bursts are based on the total amount of packets that are accumulated, or rather enter a switch during a given time period (column 6, lines 30-54). This is further evidenced as the number of packets accumulated during the interval is subsequently employed by the number generator so as to generate a synthetic traffic stream which comprises the aforementioned bursts (column 6, lines 45-64). Examiner also notes that the claim language is broad regarding claim 1, reciting "generating the traffic burst based at least in part on the accumulated compensatory traffic". However,

there are no limitations that explicitly recite the relationship which constitutes the generated traffic burst being "based" on the accumulated traffic. Therefore the Appellant's claim 1 fails to exclude Smith's teachings of the traffic burst being generated based on the numerical amount of accumulated compensatory traffic.

In considering (II), Appellant contends that one skilled in the art would have not been motivated to modify Smith to incorporate the techniques disclosed in St. Hontas in view of the explicit teachings of Smith directly away from such a modification. Examiner respectfully disagrees. Examiner asserts that although Smith discloses that the autoregressive model has been "unsuccessful in characterizing the bursty nature of ATM traffic" (column 1, lines 60-65), that the reference also explicitly discloses that the autoregressive technique has conventionally been applied to random number generators for the modeling of ATM traffic (column 1, lines 56-66). Thus, it is evident that Smith is not teaching that the incorporation of the techniques of St. Hontas would fail to be functionally combinable with the random number generator of Smith, merely that it is considered to have inferior results in the ATM environment. However, as specifically disclosed in St. Hontas, the autoregressive techniques employed by a traffic generator are also intended for operation within the ATM environment (abstract, page 1). Therefore, it is further evidenced that the autoregressive techniques of St. Hontas are conventional and operational in the ATM environment. It logically follows that it would be obvious for one of ordinary skill in the art to apply the aforementioned well known technique of St. Hontas to the known traffic generator of Smith, both of which are

disclosed for operation in the ATM network, and subsequently the combination would yield a predictable result to one of ordinary skill in the art. Examiner further notes that disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or no preferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). “A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use.” In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). See MPEP 2123.

In considering (III), Appellant contends that Bae discloses if a number of cells arriving during an interval is less than the threshold value of tokens in the token pool, no traffic is added to the queue. Examiner respectfully disagrees. Examiner asserts that Bae expressly discloses for a cell to enter a network that the particular cell must obtain a token, and if there is no token then the cell must wait in the queue until a new token is generated (page 177; column 1, paragraph 3). Therefore, according to the teachings of Bae a cell will have to enter a queue in the case where the threshold value for tokens has not been reached and tokens are continued to be generated, but there is no token currently available. Therefore, as opposed to Appellant's suggestion, there generation of tokens are not able to immediately obtain a token from the pool, but rather must wait in the queue subsequently causing traffic to be added to the aforementioned queue.

In considering (IV), Appellant contends that Bae does not teach generating traffic bursts in a manner which tends to compensate for temporary reductions in the amount of traffic of another type so as to substantially maintain a particular level of traffic flow. Examiner respectfully disagrees. Examiner asserts that Bae expressly discloses allowing for a certain degree of burstiness to further enforce control of the traffic flow. Additionally, Bae discloses that the traffic flow is controlled through the distribution of tokens, which creates bursts that maintain an average input rate of the traffic. Clearly, it can be determined that in order to maintain an average input rate, that the bursts must correspond to the amount of traffic entering the network, which is inclusive of reductions or increases. As a result, Examiner asserts that Bae teaches the limitations of Appellant's claim language.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/LaShanya R Nash/

Examiner, Art Unit 2453

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